WHAT IS CLAIMED IS:

1. A deformable optical system, comprising:

a reflection device having a first reflecting surface and a second surface;

an integrated circuit actuator having moveable extensions extending from a support surface and coupled to the second reflective surface;

electrodes individually coupled to corresponding ones of the extensions; and

a controller coupled to the electrodes configured to control the extensions via the electrodes.

2. The deformable optical system of claim 1, wherein the reflection device is a mirror.

3. The deformable optical system of claim 1, wherein:

the integrated circuit actuator is a piezoelectric device;

the support device is a piezoelectric chuck; and

the extensions are piezoelectric pins fabricated on the piezoelectric chuck.

4. The deformable optical system of claim 1, further comprising:

a conductive coating on a surface of the support device having the extensions; and

a conductive coating on the electrodes.

5. The deformable optical system of claim 1, further comprising:

a measuring system that measures a wavefront aberration, wherein the controller controls the extensions based on the measured wavefront aberration.

6. The deformable optical system of claim 5, wherein a number of the extensions used corrects higher order portions of the measured wavefront aberration.

7. The deformable optical system of claim 5, wherein a number of the extensions used corrects for all orders of the measured wavefront aberration.

8. The deformable optical system of claim 1, further comprising:

a measuring device configured to determine the wavefront aberration.

9. The deformable optical system of claim 8, wherein a number of the extensions used corrects at least one of Zernike polynomial terms and other representations of the wavefront error.

10. The deformable optical system of claim 1, wherein the control system measures a change in capacitance of the extensions to determine characteristics of movement of the extensions.

11. The deformable optical system of claim 10, wherein the characteristic of movement of the extensions corresponds to a characteristic of movement of the first reflecting surface.

12. The deformable optical system of claim 1, wherein the reflection device is substantially planar.

13. The deformable optical system of claim 1, wherein the reflection device is curved.

14. The deformable optical system of claim 1, wherein a height of the extensions correlates to an amount of decoupling of the extensions from each other.

15. The deformable optical system of claim 1, wherein the extensions are from less than 1 micron to more than 1 millimeter in width or diameter.

16. A deformable optical device, comprising:

a reflection device having a first reflecting surface and a second surface;

an integrated circuit actuator having a support device and moveable extensions extending therefrom, which are coupled to the second surface; and

electrodes coupled to corresponding ones of the extensions.

17. The deformable optical device of claim 16, wherein the reflection device is a mirror.

18. The deformable optical device of claim 16, wherein:

the integrated actuator is a piezoelectric device;

the support device is a piezoelectric chuck; and

the extensions are piezoelectric pins fabricated on the piezoelectric chuck.

19. The deformable optical device of claim 16, further comprising:

a conductive coating on a surface of the support device having the extensions; and

a conductive coating on the electrodes.

20. The deformable optical device of claim 16, wherein the reflection device is substantially planar.

21. The deformable optical device of claim 16, wherein the reflection device is curved.

22. The deformable optical system of claim 16, wherein the extensions are from less than 1 micron to more than 1 millimeter in diameter or width.

23. A method comprising:

detecting wavefront aberrations;

generating a control signal based on the detected aberration;

moving extensions of a integrated circuit piezoelectric actuator based on the control signal; and

deforming a reflector based on the moving of the extensions to correct the aberrations in the wavefront.

24. The method of claim 23, wherein the moving and deforming steps compensate for higher order values of the aberrations.

25. The method of claim 23, further comprising generating a Zernike polynomial from the detecting step, wherein the moving and deforming steps correct for aberrations corresponding to all orders of the Zernike polynomial.

26. The deformable optical system of claim 1, wherein a number of the extensions is at least up to 1 million per square millimeter.

27. The deformable optical system of claim 1, wherein:

the integrated circuit actuator is a piezoelectric device;

the support device is a piezoelectric chuck; and

the extensions are at least one of piezoelectric pins, strips, and concentric rings fabricated on the piezoelectric chuck.